

UNITED STATES GOVERNMENT

Memorandum

TO : Refuge Manager
Winona, Minnesota

DATE: January 20, 1977

FROM : District Manager
Savanna, Illinois

SUBJECT: Narrative Report, Savanna District, July - December, 1975.

PERSONNEL

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Jensen, John A., Biological Aid, Intermittent, EOD Oct. - Term. Nov.
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I. GENERAL

A. Introduction

The Savanna District of the Upper Mississippi River Wildlife and Fish Refuge consists of nearly 43,000 acres of bottomlands located along the Mississippi River between Dubuque and Rock Island.

B. Climatic and Habitat Conditions

Weather conditions were generally normal for the reporting period with no extremes in temperature or precipitation prevailing. River levels remained stable at normal pool levels and backwaters were low at freeze-up. Backwaters were ice-covered by the last of November and the main channel was ice-covered 20 December which also was the last day of commercial navigation for the season.

II. CONSTRUCTION AND MAINTENANCE

A. Construction

Damage to the Spring Lake dike caused by high water and resultant wave action has continued. The dike is still useable, however, the safety aspects of the situation are becoming paramount. The regional safety officer inspected the eroded dike section and indicated that future public use on the dike would not be permitted if the condition of the dike continued to deteriorate.

Loss of the dike will result in a significant reduction in certain district outputs. The unit was developed primarily for waterfowl and loss of the dike will eliminate our management capability for this objective. In addition, use by numerous tour groups and the Thomson Eco Center will be lost. Repair necessary to retain these



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aspects of the district program will include resloping of 1300 feet of the dike and should also include revetment of the repaired section to provide a measure of permanence to the facility.

B. Maintenance

Fill around both water control structures at Spring Lake has eroded during high water periods and thus, both controls were ripped to provide protection from further erosion. Numerous other items of maintenance were accomplished but were of a minor nature.

III. HABITAT MANAGEMENT

A. Croplands

A total of five cooperative farming agreements covering 162 acres were in effect during the period. Crops grown included corn and millet and with one exception the refuge share of crops remained in the field. Approximately 200 bushels of corn were harvested and transferred to other refuge districts for use in banding programs.

B. Wetlands

The water level in the Spring Lake impoundment continued to recede and reached a low of 583.4 msl in November. At this time the river level raised allowing release of water into the unit via the west control. The water level in the unit was raised approximately .6 feet and stood at 583.9 msl at the end of the year.

The primary objective of water management in this unit is to reverse vegetative succession that has taken place during past years. Low river levels and a lack of precipitation prevented holding water levels specified in the management plan. However, in spite of these conditions some progress toward objectives was achieved.

Due to deterioration of water management facilities at Pleasant Creek we are now unable to exert effective control over water levels on these bottomland lakes. At the end of the year, both Golden and Flat lakes were nearly dry and Bonnie lake was also low.

IV. WILDLIFE

A. Migratory Birds

1. Waterfowl

Waterfowl production was below normal this year due to spring flooding which destroyed the first nesting attempt. Not only were ground nesting birds affected but the crest of spring flood waters was high enough to flood a number of wood duck and hooded merganser nests. The timing of high water was such that Canada geese were flooded during the late stages of incubation and thus few renested. Most duck nests were flooded during late laying and early incubation stages and thus most ducks probably renested as waters receded.

Wood duck banding was accomplished using two floating traps.

placed in Spring Lake. A total of 408 wood ducks was banded. The age ratio of birds banded favored adults and the sex ratio favored males. Little difficulty was experienced in trapping the quota of 400 birds however, attaining an even age and sex ratio was not nearly so easy.

Six wood duck roosts were censused during September and indicated a 43% reduction from the previous year's counts. This census is an attempt to determine the trend of the wood duck population however, there is serious doubt that this objective can be achieved with the present census procedure. There appear to be numerous factors affecting roosting habitat that significantly influence the counts independent of wood duck population trends. In some cases, these factors affect counts to such a degree that any change in wood duck population trends would be masked. At present, it would appear that these counts do not contribute to achievement of district objectives and thus must be re-evaluated.

Fall waterfowl use was the highest it has been in recent years. During the hunting seasons nearly all waterfowl use was confined to closed areas during the daylight hours. A record number of birds used the Spring Lake closed area and peaked at 113,000 birds on 17 November. This peak population consisted primarily of scaup and mallards. Fall duck use of this area has continued to increase during the past eight years. The Elk River closed area also held several thousand mallards during November but the Pleasant Creek closed area held few birds after the wood ducks and blue-winged teal had migrated from the district. The goose population peaked at 1900 birds and most geese used the Spring Lake area.

The pattern of fall waterfowl use is affected directly by hunting pressure and the closed areas. Before hunting seasons begin migrant birds are scattered throughout the district. However, when hunting seasons open, birds are concentrated in the closed areas and adjust daily feeding behavior to avoid hunting pressure. The closed areas do not have enough feed to meet the need of these concentrations of birds and thus feeding flights of grain feeding birds to off-refuge fields and of divers to pool areas, especially Pool 13, have developed. Feeding flights are made after shooting hours close in the evening and most birds have returned to closed areas by opening of morning shooting hours. This pattern of feeding flight behavior seems to be affected little by weather conditions.

Hunting seasons opened in October and the fair weather and large numbers of birds attracted heavy hunting pressure. Iowa had a split season and with the Illinois season opening between the Iowa split there was in effect three openings of the waterfowl hunting season. Both states had point system regulations in effect. Hunting success during opening days resulted in success of approximately 1.1 ducks/hunter/day. The birds reacted quickly to hunting pressure and thus following opening days hunting success dropped to .5 ducks/hunter/day. Species composition of the bag consisted primarily of wood duck and blue-winged teal early in the season but then shifted

to mallard, green-winged teal and scaup as the season progressed.

An attempt was made to collect gizzards and wings from 250 immature mallards at the Green Island area. Two students from Loras College, Dubuque, Iowa, were hired to assist in collection during weekends. A total of 1,525 hunters were contacted with a bag of 1,306 ducks. Of the total bag checked, only 268 were mallards and of the mallards only 63 were immature birds. In spite of a great deal of effort and expense we were unable to meet the objectives of the sampling framework.

2. Marsh and Water Birds

Double-crested cormorants are of particular interest in this part of Illinois as Pool 13 has the only remaining nesting colony. Mortality of this bird during the fall hunting season appeared to be reduced from previous years possibly a result of enforcement efforts. Fall use of cormorants is concentrated in Pool 13 and the Spring Lake area which is used as a primary feeding area.

An observation of particular interest was made 23 December, when 25 white pelicans were sighted near Sabula.

3. Raptors

Bald eagles arrived during late fall and the population exceeded 200 birds by the end of the period. Concentrations were observed below locks and dams and the Cordova power plant. No dead or injured eagles were noted during the period.

B. Mammals and Non-Migratory Birds and Others

1. Mammals

Much concern was expressed by trappers that furbearer populations, especially muskrat, were declining. This was true for muskrats as evidenced by census transects that indicated a 30% decline in the muskrat population. Trapping take of muskrats did not decrease as much with only a 19% reduction indicated in catch reports. Beaver transects indicated a drop in population of 10%. This is attributed to the opening of the Illinois portion of the district to beaver trapping and a resultant large catch of this furbearer in Pool 12. Trapping interest has remained rather stable in recent years in spite of increasing fur values. Trapping catch has tended to follow the trend of the furbearer population but value of the catch has remained stable due to the increasing value of the fur.

2. Other Animal Life

Low levels in backwater areas have set the stage for an above normal fish kill during the winter period. Fish kill has already been observed in some backwater areas in the district. Species of fish observed winter killed include sunfish, crappie, largemouth bass, bullhead, shad and carp.

The conditions present at freeze-up resulted in clear ice that permitted an above normal turtle harvest during the early winter period. These ideal conditions persisted in many backwater areas and resulted in over harvest of an already over harvested resource.

V. INTERPRETATION AND RECREATION

A. Information and Interpretation

1. On-Refuge

Various bird groups toured the Spring Lake area to view waterfowl concentrations. The Thomson Eco Center utilized the Spring Lake area in their environmental education program. This period, they took 536 students from surrounding schools through the area.

2. Off-Refuge

The district participated in a weekly radio show at local station, WCCI, Savanna, in cooperation with personnel from the Illinois Department of Conservation. The refuge hosted the half hour program every fourth week. During October the management of the station reorganized personnel and completely revised programing with one of the results being that the "Outdoor Show" was eliminated because it didn't fit the new format.

B. Recreation

Hunting, fishing and trapping were the primary activities taking place during the period. There were slight increases in these activities this period due to favorable late fall weather.

C. Enforcement

Enforcement efforts were concentrated during the fall hunting seasons. During the Illinois early teal season six federal and two state agents were present on the refuge. Only two violations were processed. The low number of violations was attributed to lack of hunter participation and compliance with regulations by those who did.

During the regular duck season a decrease in violations was observed in the West Lake area of Pool 13. This area received heavy hunter pressure and it would appear past enforcement efforts have had an effect in reducing violations in this area. Scull boaters in Pool 13 have not recieved due attention in past years so an effort was made to work this area. Numerous citations were issued primarily for operating boats with uncased-loaded guns.

VI. OTHER ITEMS

A. Cooperative Programs

Great II has been organized and is in the process of working to obtain funding and official recognition. District personnel participated in work groups, dredging recommendation formulation and dredging accomplishment inspection. Further progress of Great II will be enhanced upon authorization of funds to begin planned programs of study.

The Rock Island Corps of Engineers accomplished dredging in two locations in this district. The amount of dredging accomplished this year was less than normal. One of the sites was located adjacent

to the Green Island area in Pool 13 and dredging was accomplished with a minimum of adverse impacts. The other site was located in Beaver Slough in Pool 14 and the effects of this operation are a matter of conjecture. The spoil was placed in open water along the edge of the slough. It is the opinion of district personnel that the spoil will not remain but will move downstream. The Corps contends that the spoil will remain and will be used to construct the Clinton floodwall scheduled for construction in 1976.

Art Gill, East Dubuque, Illinois, was granted a permit to dredge a channel across refuge land from Frenress Lake to a flooded gravel pit he owns. He completed the project in accordance with the terms of the permit and has developed harbor facilities for small boats and houseboats in the gravel pit. As a testimony to the need for this sort of development in this area Mr. Gill had rented nearly all his newly developed facilities by the end of the period.

Commonwealth Edison was granted a permit to construct a barge slip at the upper end of Savanna Slough, Savanna, Ill. This facility will be used for transporting materials to power plants under construction. Construction of the slip required dredging from the slip out to the main channel. To contain spoil from the dredging operation, the contractor was required to construct a diked holding pond on upland owned by the Savanna Park Commission to prevent filling of adjacent wetlands.

B. Items of Interest

During November a small oil spill occurred at Savanna when approximately 150 gallons of waste oil was spilled and allowed to enter the river via a storm sewer. The oil that entered the river caused a slick downstream but dissipated before it reached the pool area above L&D 13 where 50,000 diving ducks were feeding at night. The responsible individual, Mr. Wayne Williams, cleaned up the oil that remained in the sewer. The Coast Guard was notified and investigated the incident.

The towboat Blue Ridge with eight barges was tied-up at the lower end of Lock 12 waiting to be locked thru 9 November. At this time an explosion occurred in one of the barges rupturing it below the waterline. The barge was cut loose and allowed to float approximately 1,000 yards downstream and come to rest in twelve feet of water. It was then tied-off to the shore to prevent further movement downstream. The barge was loaded with salt and salvage operations were observed 11 November. Due to the fact the barge was ruptured below waterline and due to spillage during the salvage operation an undetermined quantity of salt entered the river. The barge was removed from the river following salvage operations. The incident was investigated by the Iowa Conservation Commission and the Coast Guard.

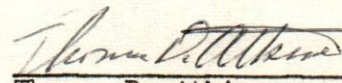
During December an explosion occurred at the Clinton Corn Processing Co. facility at Clinton, Iowa. The explosion injured a number of employees and caused the release of approximately 30 - 50 gallons of 60% PCB solution which entered the river. EPA investigated the incident.

7.
A A fish kill occurred 21 December in a settling basin in Dubuque, Iowa. The basin is fed by storm sewers and the Dubuque Packing Plant and opens directly into the river. The kill was apparently caused by amonia. An estimated 50,000 fish were killed consisting mostly of mooneye (95%). The incident was investigated by the Iowa Conservation Commission and EPA.

B. Safety

During November regional safety officer Earl Markwell inspected district facilities. Except for a few small items, Mr. Markwell seemed to think district facilities were in order.

Prepared and Submitted by:


Thomas D. Atkins
District Manager



Open water disposal by Corps of Engineers in Beaver Slough. At least 30% of this spoil moved downstream the following spring.



Boat access dredged by Mr. Art Gill to provide boater access to harbor facilities near Frentress Lake.



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Construction of diked ponding area by Commonwealth Edison at Savanna. Developer's plans would have resulted in filling wetland in foreground.

UPPER MISSISSIPPI RIVER
WILDLIFE AND FISH REFUGE

Savanna District
Savanna, Illinois

ANNUAL NARRATIVE REPORT
Calendar Year 1976

NATIONAL WILDLIFE REFUGE SYSTEM
Fish and Wildlife Service
U.S. DEPARTMENT OF THE INTERIOR



*hello tom
MB*

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I. GENERAL

A. Introduction

The Savanna District of the Upper Mississippi River Wildlife and Fish Refuge extends from Dubuque, Iowa, to Rock Island, Illinois. This portion of the river is approximately 100 miles in length and includes four navigation pools. Nearly 43,000 acres of lands owned by the Fish and Wildlife Service and the Corps of Engineers are managed as refuge.

B. Climatic and Habitat Conditions

Weather conditions, specifically temperature and precipitation, were near normal for the first quarter of the year but then began a slow but constant departure from normal toward cool and dry. At the end of the year record low precipitation and temperature were the standard. For example, total precipitation for the year was over 10 inches below normal and during the last quarter average temperature was more than eight degrees below normal.

These weather conditions significantly affected river levels, flows and water quality. The main channel was ice-free by 19 February or approximately one month earlier than the previous year. Similarly the spring crest occurred 10 April approximately one month ahead of normal. The spring crest was only 1.4 feet above floodstage at Dubuque and was the lowest crest occurring during recent years. By early summer river levels were at or near record low levels and remained at these levels through the remainder of the year. Flows were usually at less than half of normal during the second half of the year. Lack of precipitation and low flows decreased turbidity of river water to a level it has not reached for many years. Consequently siltation was not the problem it is in most years. Water levels in backwater areas became very low or in many cases backwater areas became dry by late summer, a condition occurring for the first time in many years in some of these areas. Due to low flows and cold weather, the river was permanently ice-covered by late November and commercial navigation, in spite of heroic efforts, ceased 20 December.

Vegetation responded dramatically to these unusual river conditions. Sagittaria stands developed early on exposed mud flats crowding out chufa stands that usually develop when mudflats become exposed later in the growing season. This plant was also observed pioneering in open water areas where no plants have been observed for many years. Lotus also expanded established stands but did not pioneer to the extent sagittaria did. Tremendous stands of sago developed but a significant amount of these plants were uprooted by rough fish and wave action by late August.

Crops grown on refuge lands were affected somewhat by these unusual weather conditions. Yields of corn and millet in most cases were below normal however, the quality of the grain produced was above normal. In contrast, the quantity of mast production was exceptional this year. Primary producers of banner nut crops

included oak, hickory and black walnut.

C. Land Acquisition

Nothing to Report

D. System Status

This section completed by Winona Office.

II. CONSTRUCTION AND MAINTENANCE

A. Construction

The badly eroded west dike at Spring Lake was resloped by Savanna Construction. Resloping was accomplished along 1300 feet of the damaged dike thus ensuring continued use of the unit by various groups and the Thomson Eco Center. The dike is also necessary for waterfowl management on the unit.

Various projects were completed at Pleasant Creek by Hayward Construction and included grading of 2.1 miles of access road, clearing fields of flood debris and invading maples and willows and building-up the crossing at the Milwaukee railroad tracks to provide for safer crossing.

The road to the south agricultural field at Spring Lake was raised and gravelled by Doty and Hoffman Construction. This project will allow the permittee timely access to the field when conditions are suitable for field work which has not been the case in the past.

B. Maintenance

Approximately 1.2 miles of the Pleasant Creek access road were gravelled by Trenkamp Quarry. The remaining .7 miles were gravelled by refuge personnel.

The cross dike at Spring Lake was gravelled by Doty and Hoffman Construction. The remainder of the dike on this unit was gravelled by refuge personnel.

The area in front of the Goosepoint Overlook at Spring Lake has grown up to trees to such an extent that observation of waterfowl, the attraction prompting development of the overlook, is severely restricted. During the spring the trees were removed and now the area serves as a very attractive observation point.

C. Wildfire

Nothing to Report

III. HABITAT MANAGEMENT

A. Croplands

A total of five cooperative farming agreements were in effect this year covering 162 acres. Corn and millet were the crops grown with yields being below normal but quality of grain produced above normal. Except for 700 bushels of corn harvested for the refuge banding program, the refuge share of crops was left standing in the fields for utilization by wildlife. Utilization of standing crops left for resident wildlife populations at Pleasant Creek was nearly complete. Crop units at Spring Lake were used by up to 4,000 mallards during late fall.

B. Grasslands

Nothing to Report

C. Wetlands

The primary objective of wetland management at the Spring Lake unit was to hold the water level at or near 585 msl to reverse vegetative succession that has taken place in recent years. Following the spring flood which put water over the spillway but did not submerge the cross dike, the water level in the impoundment receded. During the summer and early fall we were unable to divert water into the unit due to low river levels. The water level receded to a low of 582.8 msl 16 October, at which time a slight raise in river levels permitted gravity flow into the unit and the water level was raised to 583.2 msl.

In spite of the impossibility of maintaining water levels at approved levels some progress toward objectives was achieved. Emergent vegetation such as sagittaria and lotus did not spread and willow stands in the unit were reduced a slight amount. Vegetative development in similar but unmanaged areas of the backwaters was in direct contrast to this indicating some sort of success at water management on the unit.

We were unable to hold water in the Pleasant Creek impoundments through the summer. Dike washouts on Flat and Golden lakes allowed these lakes to de-water as the river level receded and they became dry by mid-summer. The Bonnie Lake control leaks but we were able

to hold water in this lake until early fall when it too, like many other backwaters, went dry. If the water management facilities at Pleasant Creek had been in good repair the lakes probably would have dried-up anyway but there would have been water available for duck broods for a longer period of time.

D. Forestlands

Nothing to Report

E. Other Habitat

Nothing to Report

F. Wilderness and Special Areas

Nothing to Report

G. Easements for Waterfowl Management

Nothing to Report

IV. WILDLIFE

A. Endangered and/or Threatened Species

1. An American Peregrine Falcon was observed at the Spring Lake area on several occasions during the fall. This species is usually observed at this location nearly every year.

Osprey were also observed on the district during the year with the peak population estimated at five birds.

B. Migratory Birds

1. Waterfowl

Waterfowl populations returned to the district about one month earlier than normal due to favorable weather conditions. Canada goose numbers peaked at 8,500 on Spring Lake the last week of February. This is interesting as less than one-fourth this number of birds use the area during the fall migration. This difference between spring and fall use has been consistent during recent years. Diver use of the pool area above L&D 13 was spectacular and exceeded the previous fall's record use. Approximately 92,400 scaup were observed on this area 2 April and the scaup population on the

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district peaked at 140,000 birds during the first week of April. As opposed to fall migration, when birds concentrate in closed areas, during the spring migration birds were scattered throughout the entire district with the only real concentration of ducks occurring above L&D 13.

Wood duck spring flight counts indicated an increase of 29% from the previous year's counts. Habitat conditions were dissimilar between the years making direct comparison between counts questionable, however, general observation during the nesting season indicated an apparent above normal number of breeding birds were present on the district.

During February 99 nest boxes at Pleasant Creek were checked for use by wood ducks and hooded mergansers. Use of the boxes was only 27% indicating use during the 1975 nesting season was well below normal. The fact that the spring flood of that year flooded nest boxes while many birds were initiating nests probably accounts for the decreased use of the boxes.

Waterfowl production was above average due to favorable nesting conditions occurring during the spring. The single most important factor favoring production this year was the level and timing of the spring flood. Flooding of nesting habitat was minimal and in most cases birds that lost nests to flooding were in the laying or early stage of incubation and thus probably renested. Brood observations made during May indicated a successful early hatch. The estimate of Canada goose production of 40 birds is probably conservative but is an increase from the previous year. It was encouraging to note that at least 20 geese were produced in Pool 12 this year. Hopefully, this is an indication that efforts at establishing a local breeding flock of geese will be successful.

Wood duck banding was accomplished using four floating traps placed in Spring Lake. It took just ten trapping days to band 410 wood ducks. This year the age ratio favored hatching year birds as opposed to adult birds and may possibly be considered an indication of excellent production. The sex ratio favored males which is normal in our trapping operation.

Fall roost counts were not completed this fall due to a lack of personnel.

Fall waterfowl use of the district was less than spectacular. In fact, fall peak population was the lowest in recent years and was less than half the peak occurring the previous fall. Observations indicate that many birds passed through the district but few remained

for any length of time. On several occasions migrations into the district were noted but as quickly as birds arrived they also left. This fact combined with an early freeze-up resulted in a below normal peak population occurring the last week of October or nearly three weeks ahead of normal.

Distribution of fall waterfowl use was directly influenced by habitat conditions and hunting pressure. There was no waterfowl use in the Pleasant Creek area because there was no water. The Savanna Army Depot usually holds a large number of birds but much of this area was also dry so few birds used it. Most birds used Spring Lake and Elk River Closed areas and the pool area above L&D 13. The peak fall population in Spring Lake was only 45,000 birds and terminated an eight year trend of increasing peak populations. The pool area above L&D 13 is usually used by divers at night as a feeding area however, this fall a flock of several thousand divers of various species utilized this area during the day also.

The nine day Illinois early teal season opened 11 September. Blue-winged teal which should have been abundant were scarce, apparently over-flying this area in migration. In fact, green-winged teal were as common in the bag as blue-winged teal. Hunter participation was low and average bag on opening weekend was only two birds per hunter.

The first half of the Iowa duck season opened 2 October. A lack of water crowded both hunters and ducks into remaining attractive areas. Hunter success was slightly below average at 1.1 ducks/hunter/day. Species composition of the kill was not characteristic of a normal opening for this time of year. The wood duck was the most common species bagged but total kill of this species was down 50% from previous years. Green-winged teal occurred in the bag nearly as frequently as wood ducks. Usually blue-winged teal and mallards out number green-winged teal in the harvest during this season. Hunter success dropped dramatically following opening weekend.

The Illinois duck season and the second portion of the Iowa season opened concurrently 23 October. Total kill was well below normal with the average bag being only .6 ducks/hunter/day on opening weekend and dropping to .3 ducks/hunter/day in November. Species composition of the harvest was unusual. Mallard and green-winged teal were taken in nearly equal numbers and accounted for more than two-thirds of the harvest. The harvest of wood duck was unusually low amounting to only 7% of the harvest during this season. Seventeen species of ducks were observed in the bag. Hunting seasons came to an early end when backwaters froze during early November and ice cover became permanent the third week of November.

2. Marsh and Water Birds

The cormorant colony in Pool 13 has gotten more than just passing interest this year. The State of Illinois placed a pole with 12 nesting platforms near the two dead trees that are currently used for nesting. The birds were first sighted in the area 29 March. By late April, 11 nests had been constructed of which five were placed on platforms put in the dead trees by district personnel. The nests were successful and produced more than 20 young. The new artificial structure was not used even by loafing birds until after the nesting season when birds were observed repeatedly on the structure. Hopefully the new structure will be used for nesting in future years.

The district population of cormorants increased during the fall and used Spring Lake as a feeding area. The birds usually loaf in the pool area above L&D 13 and make feeding flights to Spring Lake. This path takes them near many duck hunters and for the first time in many years no birds were observed shot at nor rumors to this effect heard.

The number of loons observed during the fall was uncommonly numerous. These birds tended to loaf in the pool area and feed in Spring Lake much as the cormorants. Usually only a couple sightings of this bird are made each fall but this year more than a half-dozen birds were noted on several occasions during waterfowl enforcement activities. No loons were observed shot by hunters.

White pelicans were observed again this fall but numbered only two birds on Spring Lake 30 September.

Great egrets were unusually abundant during September. During September, there were in excess of 400 in the Spring Lake area alone. These birds were observed in groups up to 50 birds on many areas of the district.

3. Shorebirds, Gulls, Terns and Allied Species

Nothing unusual to report.

4. Raptors

Wintering bald eagles were abundant on the district this year. During a count made 9 January a total of 177 eagles (29% immature) were observed. The largest group of eagles, 81 birds, was observed below the Cordova power plant where a large area of open water persisted. This is an above average number of eagles for the

district at this time of year and reflects the rather mild winter experienced up to the count date.

Fall eagle population began building up in very noticeable numbers by early November. By mid-December the eagle population peaked easily in excess of 300 birds of which approximately 40% were immature. During this period 168 eagles were observed at L&D 12 and 86 were observed at L&D 13. Record cold weather forced many of these birds to move further south by the end of the month.

A summary of eagle counts made during the sixties revealed that approximately 12% of the birds wintering on the district were immature. A summary of counts made during the past five years indicates that the percent of immatures has risen to 32%, or more than double that observed during the last decade.

A dead bald eagle was picked up near Springbrook, Iowa, 9 January. There was no physical evidence to suggest a cause for mortality. The bird was banded 18 June, 1975, seven miles east of Watersmeet, Michigan, as a nestling. The specimen was transferred to SRA Nichols.

5. Other Migratory Birds

Mourning doves are common on the district during the summer as nesters and during the early fall as migrants. Dove numbers usually peak during late August or early September depending on weather conditions. The largest numbers of doves are found on the sand prairie area located south of Thomson. Due to cool weather, dove numbers were below normal when the hunting season opened 1 September. Windy conditions prevailed during the first few days of the season and thus the average bag per hunter dropped to 3.5 birds. Following the first two days of the season the number of doves and hunters afield dropped off sharply.

C. Mammals and Non-Migratory Birds and Others

1. Game Mammals

The trend of furbearer populations continues downward as evidenced by both census transects and reported fur catch. Various explanations have been offered including high water, low water, siltation of backwaters, disease, over-harvest and some unknown cause. Factors affecting habitat conditions on the river have received the greatest support but this does not explain a similar trend in furbearer populations off the river. Despite the population trend, interest in trapping remains stable but the reported catch reflects the population trend. Total fur catch for the 1975-76

9.

season was down 29% from the previous year but value of the take was only 19% less, a reflection of increasing fur value.

Trapping interest remained at the same level for the 1976-77 season based upon number of permits (208) issued. General observation indicates another drop in furbearer populations and this fact combined with poor trapping conditions caused by an early freeze-up should result in another decrease in the fur catch. This year or next year population and catch should equal the low levels of the early 70's. It is interesting to note that even though fur prices have increased five fold during the past seven years trends of fur catch remain independent of this factor and closely related to population trends.

Habitat conditions did influence furbearers this past year, not so much from a population aspect but from a distribution aspect. Due to low or dry backwaters many furbearers were forced to move to areas near deep sloughs and the main channel.

Coyote populations are considered quite sparse in this area with a remnant population resident on the Savanna Army Depot. Indications are that this population has slightly increased during the past few years and during this trapping season one animal was taken in Spring Lake.

2. Other Mammals

Sign of river otter was observed in Pool 12, the Marcus bottoms of Pool 13 and the Meredosia bottoms in Pool 14. This animal seems to be most abundant in Pool 12 but sightings of animals have been common in Pool 14 during the past year.

3. Resident Birds

Nothing significant to report.

4. Other Animal Life

The winter of 1975-76 resulted in an above normal fish kill in spite of the fact that it was a relatively short and mild season. However, low water levels, snow-covered ice and a short but cold winter period combined to push winter conditions beyond the critical point in many areas. Some areas of significant fish kill included Marcus bottoms, Pleasant Creek, Potter's marsh area, Spring Lake, Pin Oak lakes and most any backwater isolated from the main channel. Species of fish observed winter killed included sunfish, crappie, largemouth bass, stripped bass, shad, carp, drum and bullhead.

This year a summer kill occurred when fish were trapped in backwater

areas that went dry during the summer. Pleasant Creek lakes had a distinct odor during mid-summer caused by a large kill of carp, bullhead and other species.

The winter of 1976-77 is expected to result in another fish kill that will be much greater than experienced during the previous winter. Record cold has resulted in heavy ice cover which in many backwaters that do have water will extend to the bottom. In order to survive fish will have to move to deep sloughs or areas near the main channel.

Winter fishing is reflecting the deterioration of winter fish habitat. One example is the Marcus bottoms in Pool 13 which just a few years ago was heavily fished and impressive catches of game fish were common. This winter a number of fishermen tried the area but very few fish were caught. This and similar areas have finally reached the point where habitat conditions through the winter period are not adequate to sustain a fish population. It seems the water is deep until the boat rubs bottom.

A total of 32 permits was issued for commercial fishing in Spring Lake. Total reported catch in tons was as follows: buffalo 12, drum 7, carp 10, and paddlefish .5. Commercial fishing for catfish is not permitted. Fishing pressure and catch were less than the previous few years due to only a short period of high water during the spring fishing season.

The snapping turtle population appears to be declining. Areas that traditionally produced a number of large turtles now only hold a few small individuals. Both the number of turtles and average size of turtles taken have decreased. This species is a slow growing and long lived, thus relatively susceptible to over harvest. Turtles are highly prized in this area for food and can also be easily sold at local fish markets. Recognizing this, the State has regulated taking methods to taking by hand only but this has not reduced harvest enough.

V. INTERPRETATION AND RECREATION

A. Information and Interpretation

1. On-Refuge

Public use of the Spring Lake area by organized groups continues to increase. During the year 14 different groups toured the area primarily for birding. Some groups are coming from more than 50 miles to use the area. The Thomson Eco Center conducted outdoor education during the fall involving 558 students. This activity centers on Spring Lake but includes the sand prairie south of

Thomson. The Eco Center also conducted an overnight canoe experience for a group of students on the Spring Lake area.

The Miller's lake bottomland nature trail suffered minimal damage from flooding this year. The trail requires some repair and plans are being made with personnel at the Mississippi Palasiades State Park to rebuild the trail in 1977.

2. Off-Refuge

The district manager is a member of the Carroll County Environmental Education Advisory Council. This group functions through the Thomson Eco Center and future plans include organizing and conducting teacher workshops.

News releases were submitted to area newspapers covering various subjects during the year. Local papers carrying feature stories of various aspects of refuge programs include Telegraph-Herald, Dubuque, Savanna Times, Savanna and Clinton Herald, Clinton.

Programs were presented to various groups including boy scouts, sportsmen clubs and service organizations. A program was presented at the annual Carroll County Career Days held at Shimer College, Mount Carroll.

B. Recreation

1. Wildlife Oriented

Two minor boundary changes were made on closed areas in the district this year. The south boundary of the Elk River area was moved north so it now follows the course of the river providing a more natural and obvious boundary. The north boundary of the Pleasant Creek area was moved from the main channel side of Bowman Island to the inland side of Bowman Slough. Neither of these changes affected the effectiveness of the closed areas. In past years both areas were the source of numerous inquiries from hunters, fishermen, trappers and other public users, however, since re-alignment only several inquiries were received indicating that the source of confusion has been clarified.

The number of duck hunters on the river increased this year due to dry conditions prevailing in many off-river hunting areas. This lead to crowding and conflict between hunters became common. The State of Illinois attempts to regulate spacing of hunters with a set of complex and confusing blind regulations. As a result, there was above normal competition for blind sites and hunting space resulting in numerous conflicts between hunters. On the Iowa side

of the channel there are no regulations imposed and in most years conflict is minimal. However, this year increased hunter numbers made conflict common so conditions were similar on both sides of the channel irrespective of the degree of regulation. Conflict over hunting areas begins with selection of blind sites and continues through construction of blinds and the opening weekend of the hunting season. Following opening weekend, there is a reduction in the number of hunters afield and space is no longer a serious factor.

2. Non-Wildlife Oriented

The demand for outdoor recreation continues to increase. At present we have no census procedure that yields precise data regarding the various types of public use. In addition we have little information that indicates what the relationship is between public demand and the capability of the resources to satisfy demand for both consumptive and non-consumptive uses. As demand increases the need for this type of information will increase so that proper decisions regarding public use management can be made.

C. Enforcement

Enforcement activity is directed primarily toward consumptive users including fishermen, hunters and trappers. This is not because other aspects of refuge use don't require attention but due to a shortage of personnel this is considered the most effective use of enforcement effort.

Trotline fishing is quite popular in Spring Lake, however, adherence to regulations has become somewhat lax. District personnel removed numerous illegal fishing devices and as word of our presence spread the situation in the lake improved considerably.

Also at Spring Lake, fishing within the enclosure around the pump proved irresistible to a few individuals. This area is closed to trespass for the protection of government property and public safety. During the year seven individuals were issued citations for being in the enclosure.

Most enforcement effort is expended during the duck hunting seasons. Violations during the early teal season were few due partly to a lack of participating hunters. During the regular duck hunting season there is heavy hunting pressure in the West Lake area and on the pool area above L&D 13. This year very few violations occurred in these areas hopefully due to past enforcement efforts. Usually a few cormorants are mistakenly shot in this area but no such incidents were known to occur this year.

Considerable time was spent on trapping enforcement this fall. Violations most frequently observed included staking areas before season and setting traps too close to muskrat houses. Reports of theft of traps and/or fur were well below normal as were rumors of other types of trapping violations.

Two incidents of vandalism occurred to district facilities during the year. Shortly after placing a 4 X 8 foot refuge sign at the Goosepoint Overlook it was torn off the support posts and taken. The second incident occurred during March at the Spring Lake unit. Vandals gained entry into the pump house by destroying the door lock but once inside only broke one lightbulb. They then proceeded to break the gate at the pump and destroyed one no trespassing sign. Attempts made to damage pump controls were unsuccessful, however, rocks may have been thrown into the pump pit which would require removal before operating the pump.

VI. OTHER ITEMS

A. Field Investigations

Nothing to Report

B. Cooperative Programs

District personnel participated in the activities of Great II including being working members of three work groups, fish and wildlife, side-channel openings and dredging requirements. A draft plan of study was completed for Great II and during October the program was funded in the amount of \$200,000. The fish and wildlife work group was primarily responsible for development of dredging recommendations and organized on-site inspection teams. The side-channel openings work group accomplished two openings in this district, one at Cordova, Illinois and the other north of Savanna on the upper end of Lainsville Slough. At the end of the year work groups were developing funding proposals.

Main channel dredging requirements were at a record low this year. Due to the low level and short duration of the spring flood shoaling did not occur as is normal. During the remainder of the year, flows were below normal making the wingdams very effective at containing current in the navigation channel and thus maintaining the required depth. As a result, only one site required dredging in this district. The site was located at Pleasant Creek and yardage amounted to only 16,500 cubic yards which were placed on the Savanna Army Depot.

The Meredosia Levee project was completed this year. The project included raising of Hwy. 84 by pumping fill from the river. Our involvement was to work with the contractor in preserving habitat along discharge pipeline corridors. This was accomplished with fine cooperation from the contractor.

C. Items of Interest

A small oil spill was observed at Savanna, 10 March. The quantity spilled was small and appeared to be fuel oil. It was suspected that the oil came from a commercial tow. The Coast Guard was notified of the incident.

Oil from a spill on the Maquoketa River reached the Mississippi 27 August. The amount of oil reaching the Mississippi was very small and did not warrant a clean-up effort. The spill resulted from a derailment on a bridge over the Maquoketa River. The Coast Guard investigated the incident.

Atkins completed the 16 hour course "Role of the Manager in EEO" conducted in the Twin Cities.

Atkins attended the regional conference held during June in the Twin Cities.

Breaser was promoted and transferred to Medicine Lake NWR as assistant manager effective 1 August.

D. Safety

No accidents occurred involving district personnel or equipment.

Safety training included:

Breaser: 3 hr. Cardio-Pulmonary Resuscitation

Atkins & Breaser: 8 hr. General First Aid Course.



Low water and a severe winter will reduce populations of resident wildlife this year, (beaver lodge in Spring Lake).



Agricultural fields at Pleasant Creek were cleared of flood debris and invading willows.



Eroded portion of Spring Lake dike was resloped by local contractor.

Prety steep slope?